

SEQUENCE LISTING

(1) GENERAL INFORMATION:

- (i) APPLICANT: Nan, Guo-Ling
Nagai, Chifumi
- (ii) TITLE OF INVENTION: COMPOSITIONS AND METHODS FOR GENETIC TRANSFORMATION OF PINEAPPLE

(iii) NUMBER OF SEQUENCES: 6

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- (C) CITY: San Francisco
- (D) STATE: California
- (E) COUNTRY: United States of America
- (F) ZIP: 94104

(v) COMPUTER READABLE FORM:

- (A) MEDIUM TYPE: Floppy disk
- (B) COMPUTER: IBM PC compatible
- (C) OPERATING SYSTEM: PC-DOS/MS-DOS
- (D) SOFTWARE: PatentIn Release #1.0, Version #1.30

(vi) CURRENT APPLICATION DATA:

- (A) APPLICATION NUMBER: US 09/078,862
- (B) FILING DATE: 14-MAY-1998
- (C) CLASSIFICATION:

(vii) ATTORNEY/AGENT INFORMATION:

- (A) NAME: Carroll, Peter G.
- (B) REGISTRATION NUMBER: 32,837
- (C) REFERENCE/DOCKET NUMBER: UH-03321

(ix) TELECOMMUNICATION INFORMATION:

- (A) TELEPHONE: (415) 705-8410
- (B) TELEFAX: (415) 397-8338

(2) INFORMATION FOR SEQ ID NO:1:

- (i) SEQUENCE CHARACTERISTICS:
 - (A) LENGTH: 2145 base pairs
 - (B) TYPE: nucleic acid
 - (C) STRANDEDNESS: single
 - (D) TOPOLOGY: linear

(ii) MOLECULE TYPE: cDNA

(xi) SEQUENCE DESCRIPTION: SEQ ID NO:1:

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TCTTCTTCTT CTATTACTAC TACTCTTCCT TTATGCACCA ACAAATCCCT CTCTTCTTCC	180
TTCACCAACCA CCAACTCATC CTTGTTATCA AAACCCCTCTC AACTTTCCCT CCACGGAAGG	240
CGTAATCAAA GTTTCAAGGT TTCATGCAAC GCAAACAAACG TTGACAAAAA CCCTGACGCT	300

GTTGATAGAC GAAACGTTCT TTTAGGGTTA GGAGGTCTTT ATGGTGCAGC TAATCTTGCA	360
CCATTAGCGA CTGCTGCACC TATACCACCT CCTGATCTCA AGTCTTGTGG TACTGCCAT	420
GTAAAAGAAG GTGTTGATGT AATATACAGT TGTTGCCCTC CTGTACCCGA TGATATCGAT	480
AGTGTTCGCT ACTACAAGTT CCCTTCTATG ACTAAACTCC GCATCCGCC CCCTGCTCAT	540
GCGGCGGATG AGGAGTACGT AGCCAAGTAT CAATTGGCTA CGAGTCGAAT GAGGGAACCTT	600
GATAAAAGACC CCTTGACCC TCTTGGCTTT AAACAACAAG CTAATATTCA TTGTGCTTAT	660
TGCAACGGTG CTTACAAAGT TGGTGGAAA GAATTGCAAG TTCATTTCTC GTGGCTTTTC	720
TTTCCCTTTC ATAGATGGTA CTTGTACTTT TACGAAAGAA TTTTGGGATC ACTTATTAAT	780
GATCCAACCTT TTGCTTTACC TTACTGGAAT TGGGATCATC CAAAAGGCAT GCGTATAACCT	840
CCCATGTTG ATCGTGAGGG ATCATCTCTT TACGATGAGA AACGTAACCA AAATCATCGC	900
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AGTTATACTA GCTTGCCGCA TGGTCAATGGA AGTAATACTA ATCATGTTAC CAGTGTACT	1740
TTCAAGCTGG CGATAACTGA ACTGTTGGAG GATATTGGAT TGGAAAGATGA AGATACTATC	1800
GCGGTGACTT TAATTCCAAA AGCTGGCGGT GAAGGTGTAT CCATTGAAAG TGTGGAGATC	1860
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(2) INFORMATION FOR SEQ ID NO:2:

(i) SEQUENCE CHARACTERISTICS:

- (A) LENGTH: 3509 base pairs
- (B) TYPE: nucleic acid
- (C) STRANDEDNESS: single
- (D) TOPOLOGY: linear

(ii) MOLECULE TYPE: cDNA

(xi) SEQUENCE DESCRIPTION: SEQ ID NO:2:

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GCCGGCGGCG	GCGGCGGCGG	GGGGGACCCC	AGGTCGCCGA	CGAAGGCGGC	GAGCCCCCGC	240
GGCGCGCACA	TGAACTTCAA	CCCCTCGCAC	TACTTCGTCG	AGGAGGTGGT	CAAGGGCGTC	300
GACGAGAGCG	ACCTCCACCG	GACGTGGATC	AAGGTCGTCG	CCACCCGCAA	CGCCCGCGAG	360
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CATGGTCTTG	TTCGTGGAGA	AAACATGGAA	CTAGGTCGTG	ATTCTGATAC	AGGTGGCCAG	720
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GACCTCTTCA	CTCGTCAAGT	GTCATCTCCT	GACGTGGACT	GGAGCTACGG	TGAGCCAACC	840
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GATGCTGGAG	ATGTTGCTGC	TCTCCTTTCT	GGTGCCTGA	ATGTGCCAAT	GGTGCCTACT	1140
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GAGGAGATCG	ATTGACACATA	CAAGATCATG	AGGCGTATCG	AGGGTGAGGA	GCTGCCCTG	1260
GATGCGTCAG	AGCTTGTAA	CACGAGCACA	AGGCAGGAGA	TTGATGAGCA	GTGGGGATTG	1320
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CACCGCTGGT CCCATGACGG CGCGAGGCAG ACCATAGCGA AGCTCATGGG CGCTCAGGAC	2820
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GGGAACATGT ATCTGATCAC CGGGGAACAT GGCGACACCG ATCTAGAGGA GATGCTATCC	3120
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TATAAAATAA GTTGTGAACA GTACCGCGGG TGTGTATATA TATATTGCAG TGACAAATAA	3420
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(2) INFORMATION FOR SEQ ID NO:3:

- (i) SEQUENCE CHARACTERISTICS:
 - (A) LENGTH: 13 base pairs
 - (B) TYPE: nucleic acid
 - (C) STRANDEDNESS: single
 - (D) TOPOLOGY: linear
- (ii) MOLECULE TYPE: other nucleic acid
 - (A) DESCRIPTION: /desc = "DNA"
- (xi) SEQUENCE DESCRIPTION: SEQ ID NO:3:

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(2) INFORMATION FOR SEQ ID NO:4:

- (i) SEQUENCE CHARACTERISTICS:
 - (A) LENGTH: 9 base pairs
 - (B) TYPE: nucleic acid
 - (C) STRANDEDNESS: single
 - (D) TOPOLOGY: linear
- (ii) MOLECULE TYPE: other nucleic acid
 - (A) DESCRIPTION: /desc = "DNA"
- (xi) SEQUENCE DESCRIPTION: SEQ ID NO:4:

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(2) INFORMATION FOR SEQ ID NO:5:

- (i) SEQUENCE CHARACTERISTICS:
 - (A) LENGTH: 623 base pairs
 - (B) TYPE: nucleic acid
 - (C) STRANDEDNESS: double
 - (D) TOPOLOGY: circular
- (ii) MOLECULE TYPE: other nucleic acid
 - (A) DESCRIPTION: /desc = "DNA"
- (xi) SEQUENCE DESCRIPTION: SEQ ID NO:5:

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GAGGGGCAGGG ATCTCGCGGC TGGGTCTCGG CGTGCGGCCG GATCCTCGCG GGGAAATGGGG	300
CTCTCGGATG TAGATCTGAT CCCCGTTGT TGGGGAGAT GATGGGGCGT TTAAAATTTC	360
GCCATGCTAA ACAAGATCAG GAAGAGGGGA AAAGGGCACT ATGGTTTATA TTTTTATATA	420

TTTCTGCTGC TGCTCGTCAG GCTTAGATGT GCTAGATCTT TCTTTCTTCT TTTTGTGGGT	480
AGAATTTGAA TCCCTCAGCA TTGTTCATCG GTAGTTTTC TTTTCATGAT TTGTGACAAA	540
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CCCCGGGTGG TCAGTCCCTT ATG	623

(2) INFORMATION FOR SEQ ID NO:6:

(i) SEQUENCE CHARACTERISTICS:

- (A) LENGTH: 16 amino acids
- (B) TYPE: amino acid
- (C) STRANDEDNESS: not relevant
- (D) TOPOLOGY: linear

(ii) MOLECULE TYPE: protein

(xi) SEQUENCE DESCRIPTION: SEQ ID NO:6:

Met Ala Asp Ala Glu Asp Gly Gly Ser Pro Gly Gly Gln Ser Phe Met			
1	5	10	15

CLAIMS

1. A stably transformed transgenic pineapple-like totipotent body.
2. The stably transformed transgenic pineapple-like totipotent body of Claim 1, wherein said totipotent body is a protocorm-like body.
3. The stably transformed transgenic pineapple-like totipotent body of Claim 1, wherein said totipotent body is a callus.
4. The stably transformed transgenic pineapple-like totipotent body of Claim 1, wherein said totipotent body comprises undifferentiated cells.
5. The stably transformed transgenic pineapple-like totipotent body of Claim 1, wherein said totipotent body is a pineapple totipotent body.
6. A stably transformed transgenic pineapple-like plant.
7. The stably transformed transgenic pineapple-like plant of Claim 6, wherein said plant is derived from a transgenic pineapple-like totipotent body.
8. The stably transformed transgenic pineapple-like plant of Claim 7, wherein said totipotent body is a protocorm-like body.
9. The stably transformed transgenic pineapple-like plant of Claim 7, wherein said totipotent body is a callus.
10. The stably transformed transgenic pineapple-like plant of Claim 6, wherein said plant is a pineapple plant.

11. A method for producing a stably transformed transgenic pineapple-like totipotent body, comprising:

- a) providing:
 - i) a pineapple-like totipotent body; and
 - ii) a heterologous nucleic acid comprising an oligonucleotide sequence of interest; and
- b) introducing said oligonucleotide sequence of interest into said pineapple-like totipotent body under conditions such that a stably transformed transgenic pineapple-like totipotent body is produced.

12. The method of Claim 11, wherein said pineapple-like totipotent body is a callus.

13. The method of Claim 11, wherein said pineapple-like totipotent body is a protocorm-like body.

14. The method of Claim 11, further comprising c) selecting said transgenic pineapple-like totipotent body.

15. The method of Claim 14, wherein said selecting is in liquid medium.

16. The method of Claim 14, wherein said selecting comprises detecting said oligonucleotide in the genome of said stable transformed pineapple-like totipotent body.

17. The method of Claim 11, wherein said pineapple-like totipotent body is a pineapple totipotent body.

18. The method of Claim 11, wherein said oligonucleotide is introduced by bombarding said pineapple-like totipotent body with said oligonucleotide sequence of interest.

19. The method of Claim 11, wherein said oligonucleotide is introduced by infecting said pineapple-like totipotent body with *Agrobacterium* comprising said oligonucleotide sequence of interest.

20. The method of Claim 19, wherein said infecting comprises microwounding said pineapple-like totipotent body to produce a microwounded totipotent body, and infecting said microwounded totipotent body with said *Agrobacterium*.
21. The method of Claim 19, wherein said *Agrobacterium* is agropine-type.
22. The method of Claim 19, wherein said *Agrobacterium* is nopaline-type.
23. The method of Claim 19, wherein said *Agrobacterium* is octopine-type.
24. A method for producing a stably transformed transgenic pineapple-like plant, comprising:
 - a) providing:
 - i) a pineapple-like totipotent body; and
 - ii) a heterologous nucleic acid comprising an oligonucleotide sequence of interest;
 - b) introducing said oligonucleotide sequence of interest into said pineapple-like totipotent body under conditions such that a transgenic pineapple-like totipotent body is produced; and
 - c) culturing said transgenic pineapple-like totipotent body under conditions such that a stably transformed transgenic pineapple-like plant is produced.
25. The method of claim 24, wherein said oligonucleotide is introduced by bombarding said pineapple-like totipotent body with said oligonucleotide sequence of interest.
26. The method of Claim 24, wherein said oligonucleotide is introduced by infecting said pineapple-like totipotent body with *Agrobacterium* comprising said oligonucleotide sequence of interest.
27. The method of Claim 24, further comprising prior to step c) selecting said stably transformed transgenic pineapple-like totipotent body.
28. The method of Claim 27, wherein said selecting is in liquid medium.

29. The method of Claim 27, wherein said selecting comprises detecting said oligonucleotide in the genome of said stably transformed transgenic pineapple-like totipotent body.
30. The method of Claim 24, wherein said pineapple-like plant is a pineapple plant.
31. The method of Claim 24, wherein said sequence of interest is selected from the group consisting of oligonucleotides encoding sucrose phosphate synthase, CpTi, thaumatin, and ACC deaminase.
32. The method of Claim 24, wherein said sequence of interest is selected from the group consisting of antisense polyphenol oxidase and ACC oxidase.
33. A method for producing a pineapple-like protocorm-like body comprising maintaining said pineapple-like protocorm-like body in liquid medium.
34. The method of Claim 33, wherein said liquid medium substantially comprises PI medium.
35. The method of Claim 33, wherein said pineapple-like protocorm-like body is a pineapple protocorm-like body.

Figure 1

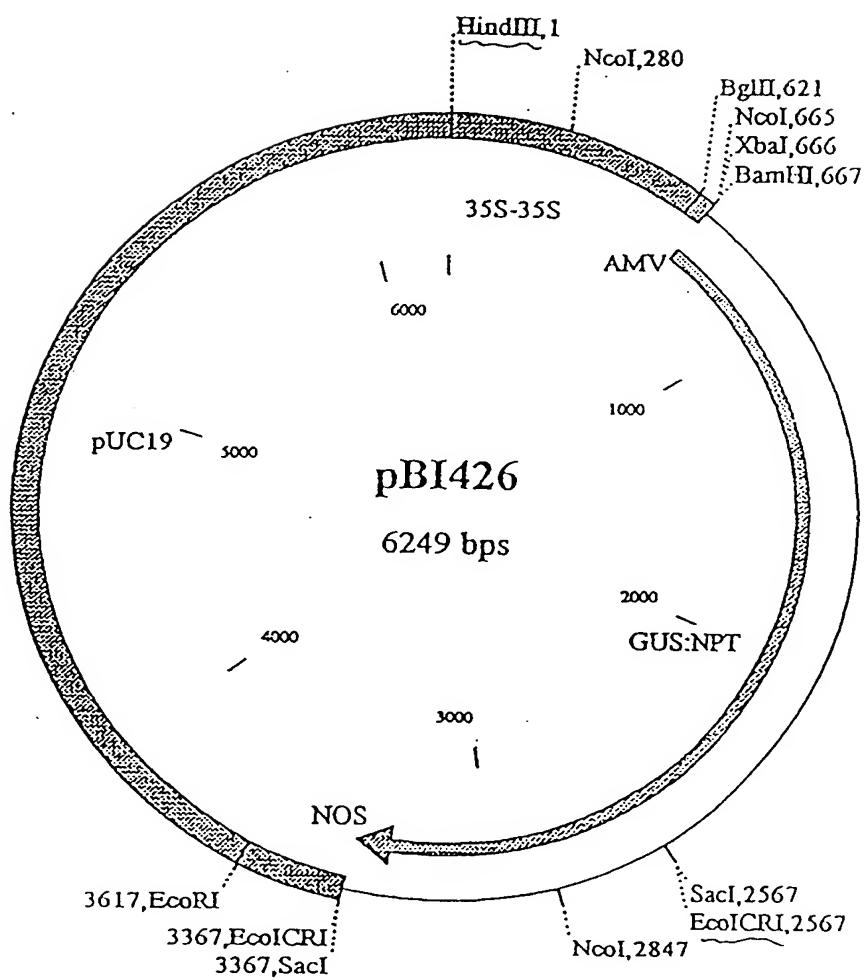


Figure 2

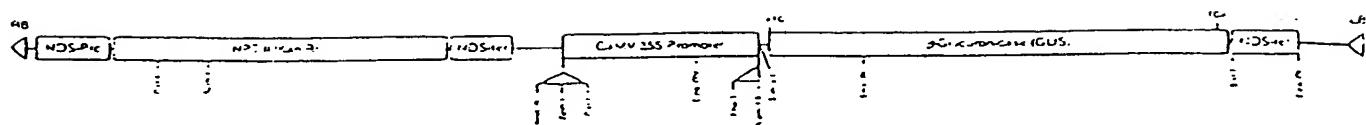


Figure 3

TATA Box
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 26 COCCCCCTCGCTGCCGGACGACGAGCTCCTCCCCCCCCCTCCOCCTCCGCCGCCGCCG/ataaccaccc
 92 cgtccctctccctttttttttccgtttttttccgtctcgatcttggccttggt
 159 tgggggcgagaggcggcctcgtcgcccagatcggtgcgcggggggggatctcgccggatgggg
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 360 Bgl II atggttatattttatataatttcgtcgctgcgcggatgtaaatcttttt
 427 tccctttgtgggtagaatttgaatccctcagcattgtcatcggtatgtttttcatgtattt
 494 gaceaatgcagcctcgtgcggagttttgtag/ GTAGAAG ATG GCT GAC GCC GAG GAT
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Figure 4

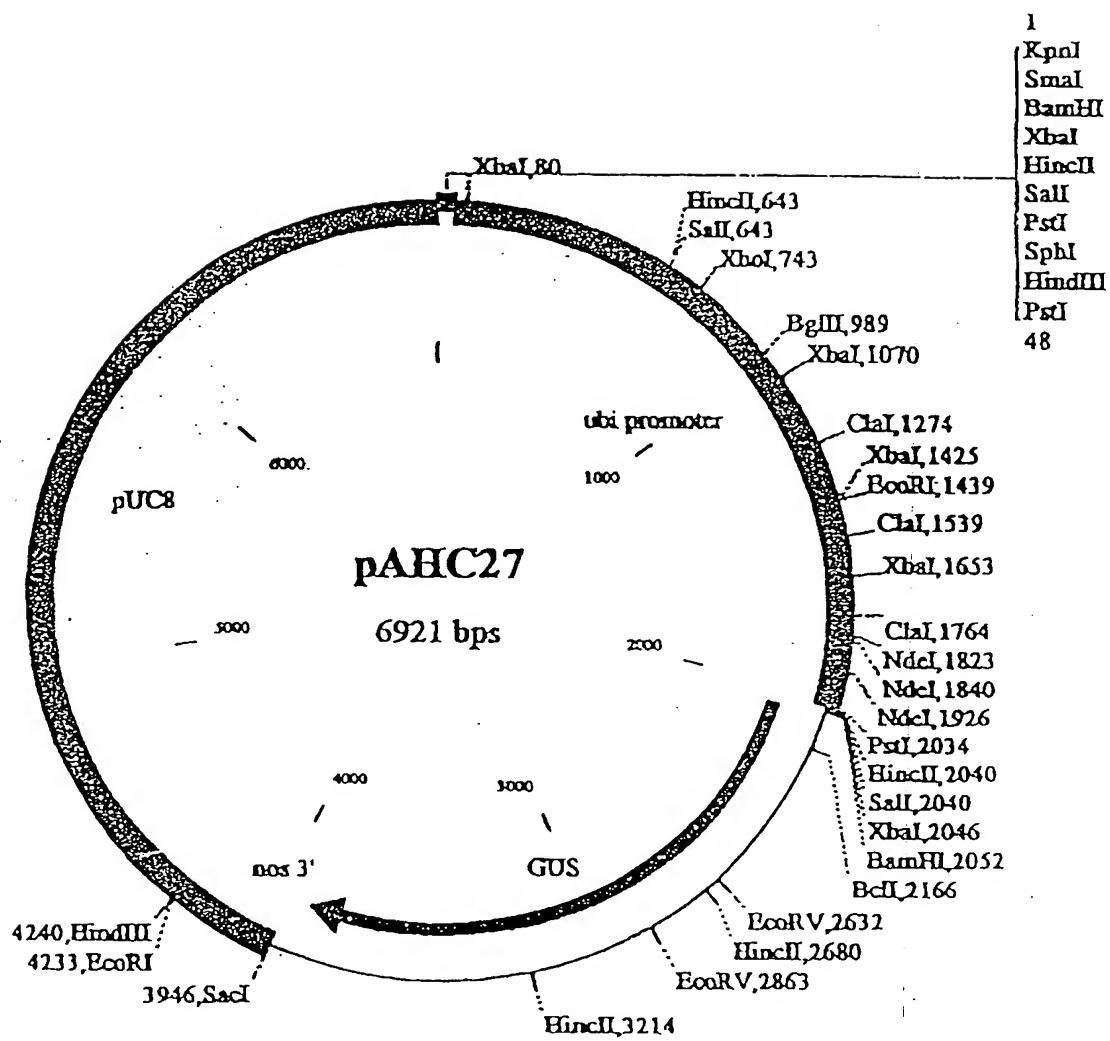


Figure 5

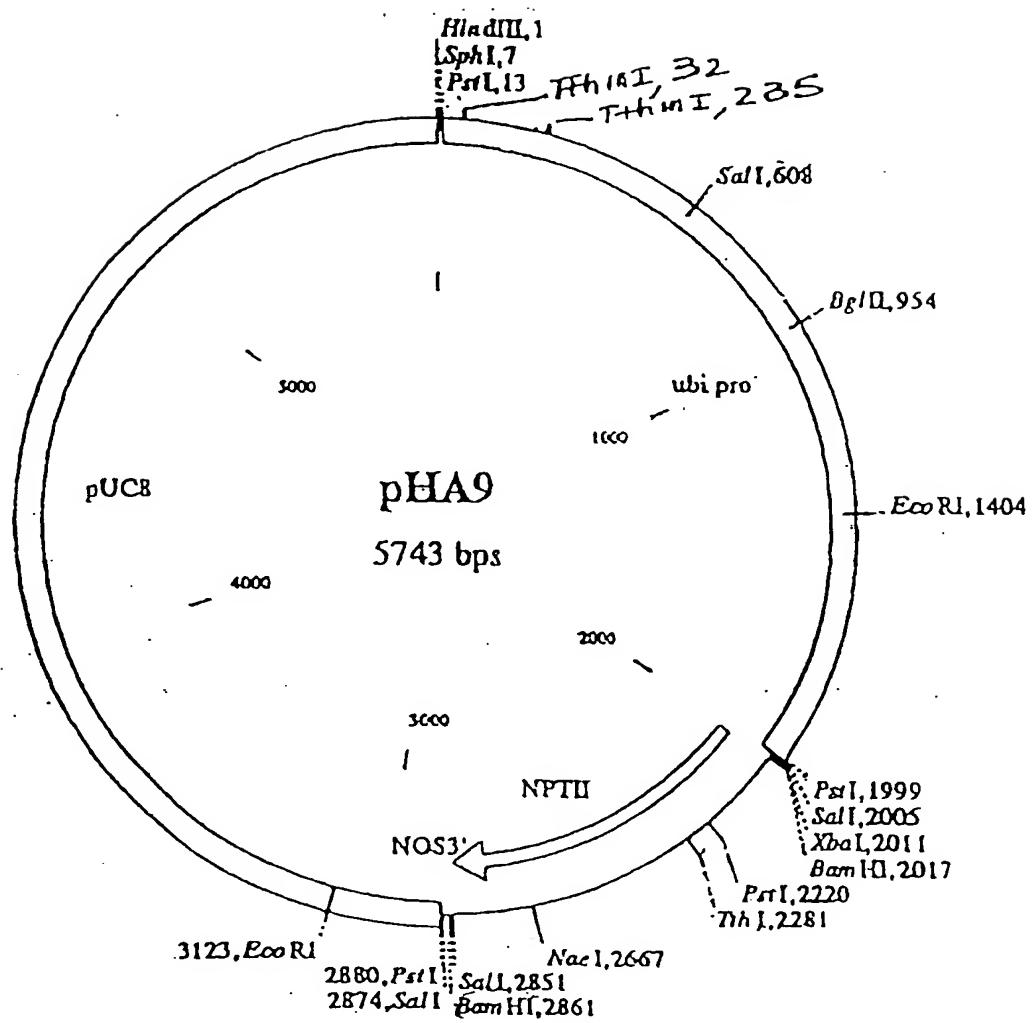
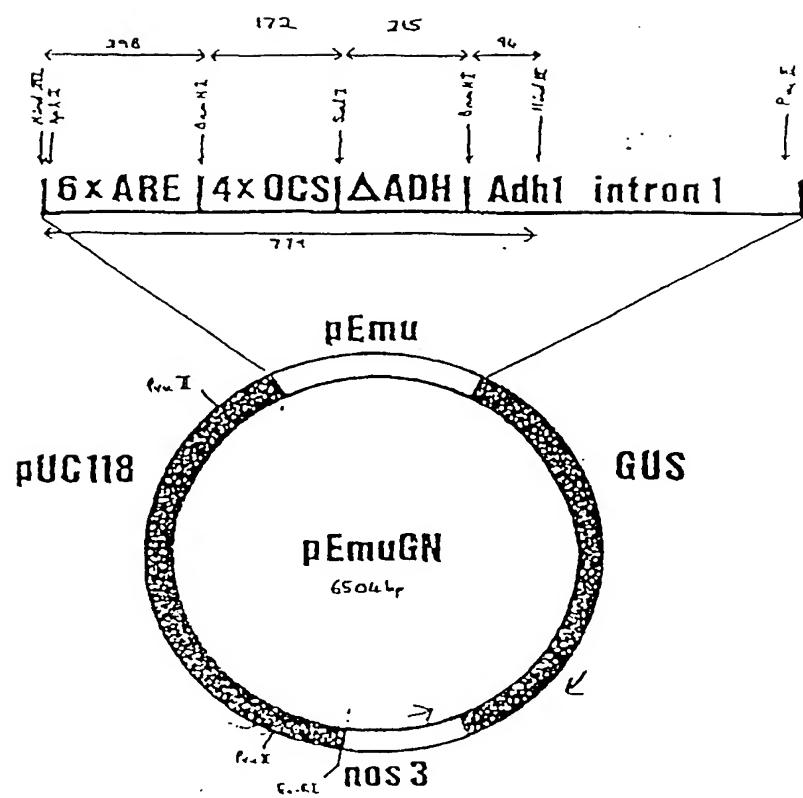


Figure 6



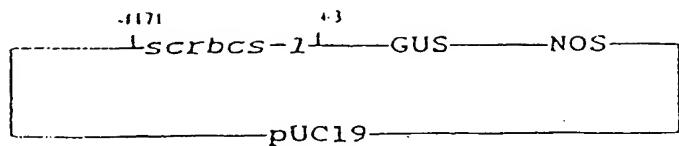


Figure 7

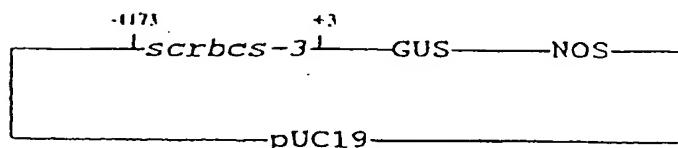


Figure 8

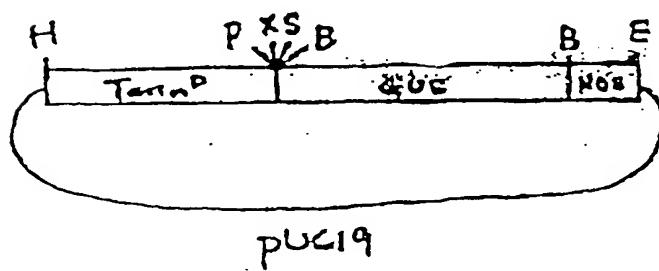


Figure 9

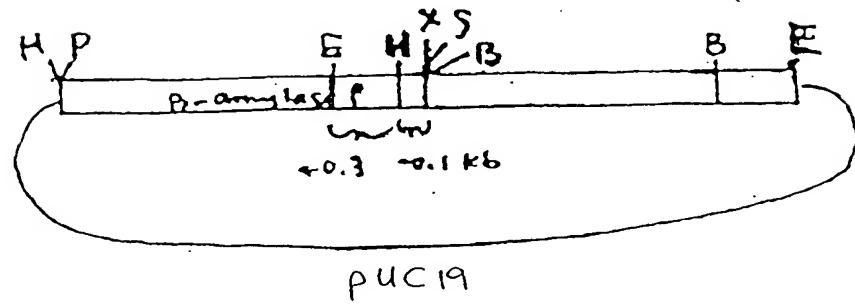


Figure 10

Figure 11

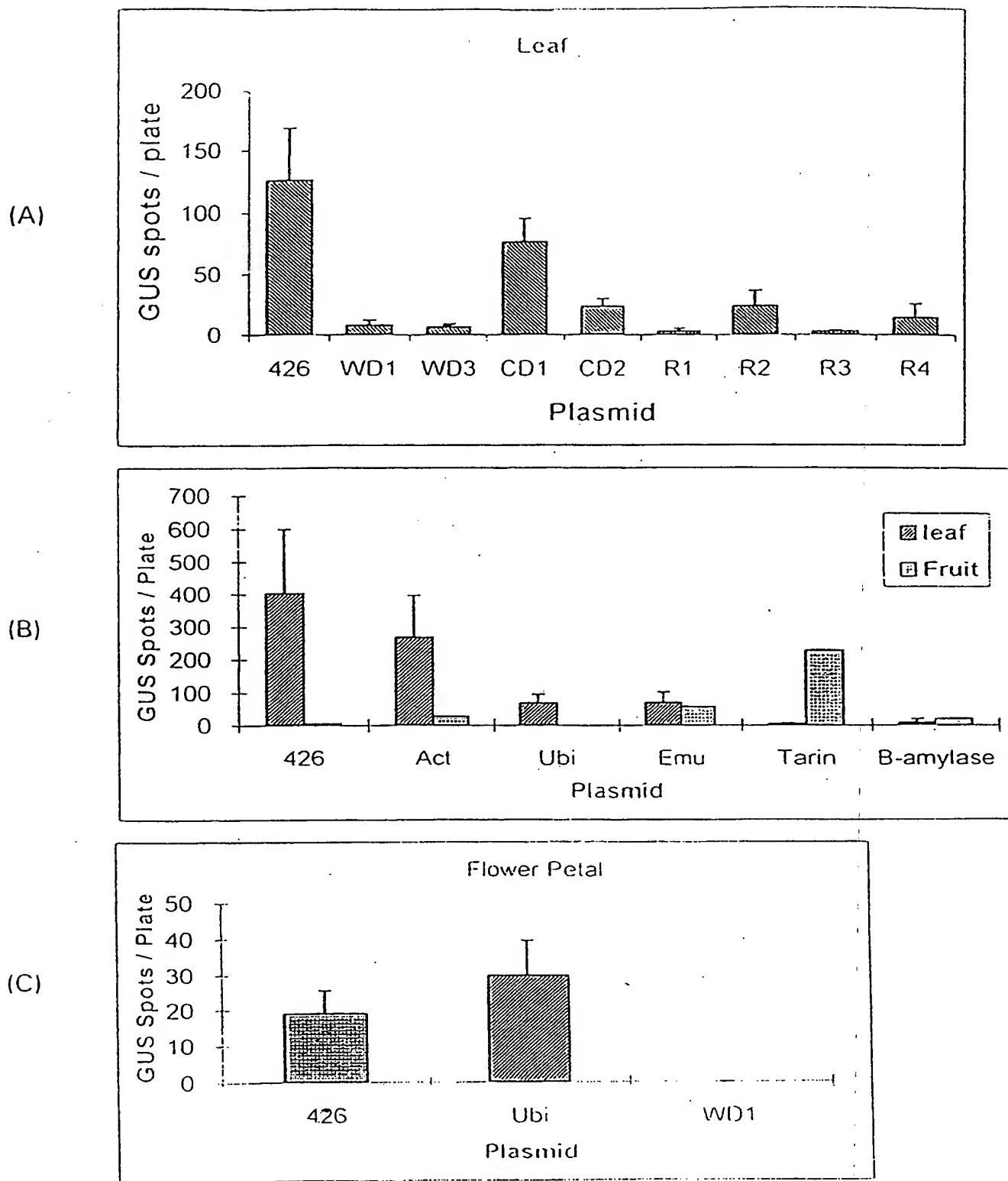


Figure 12

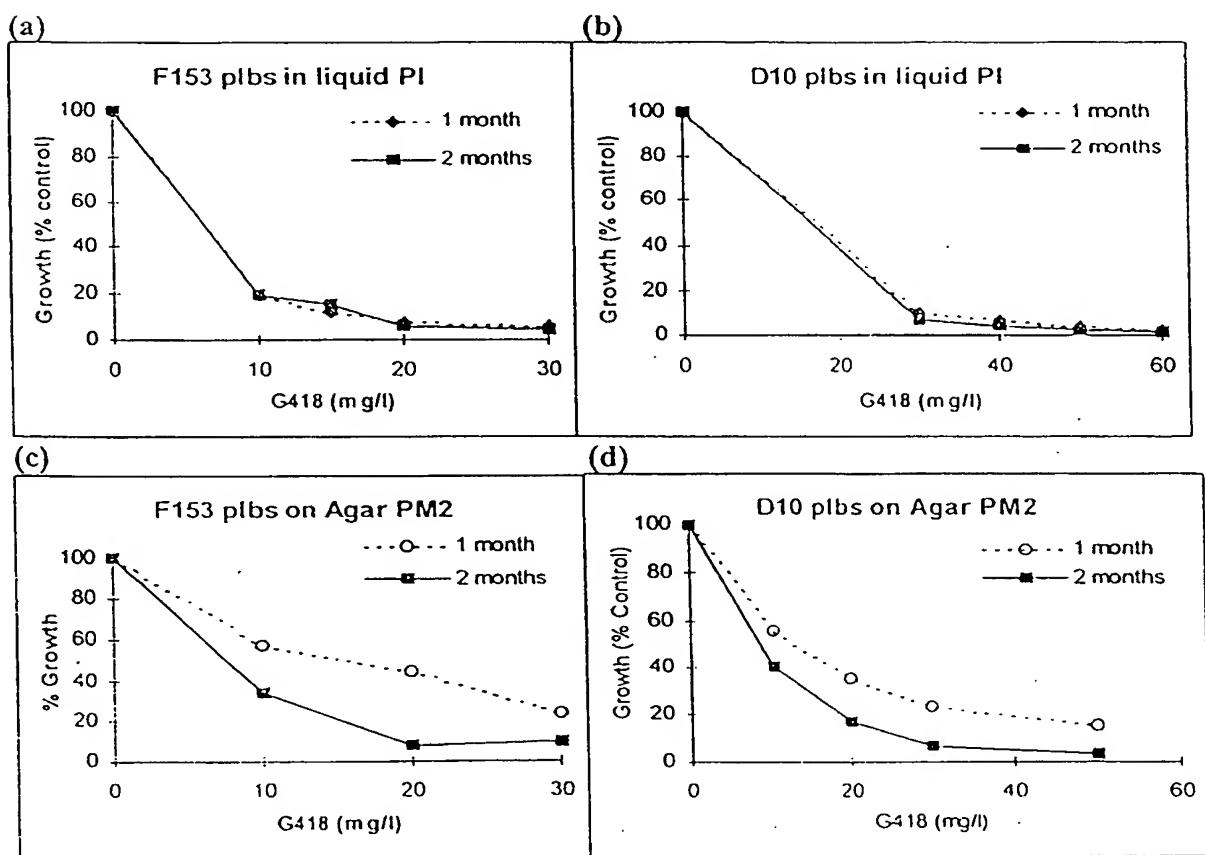


Figure 13

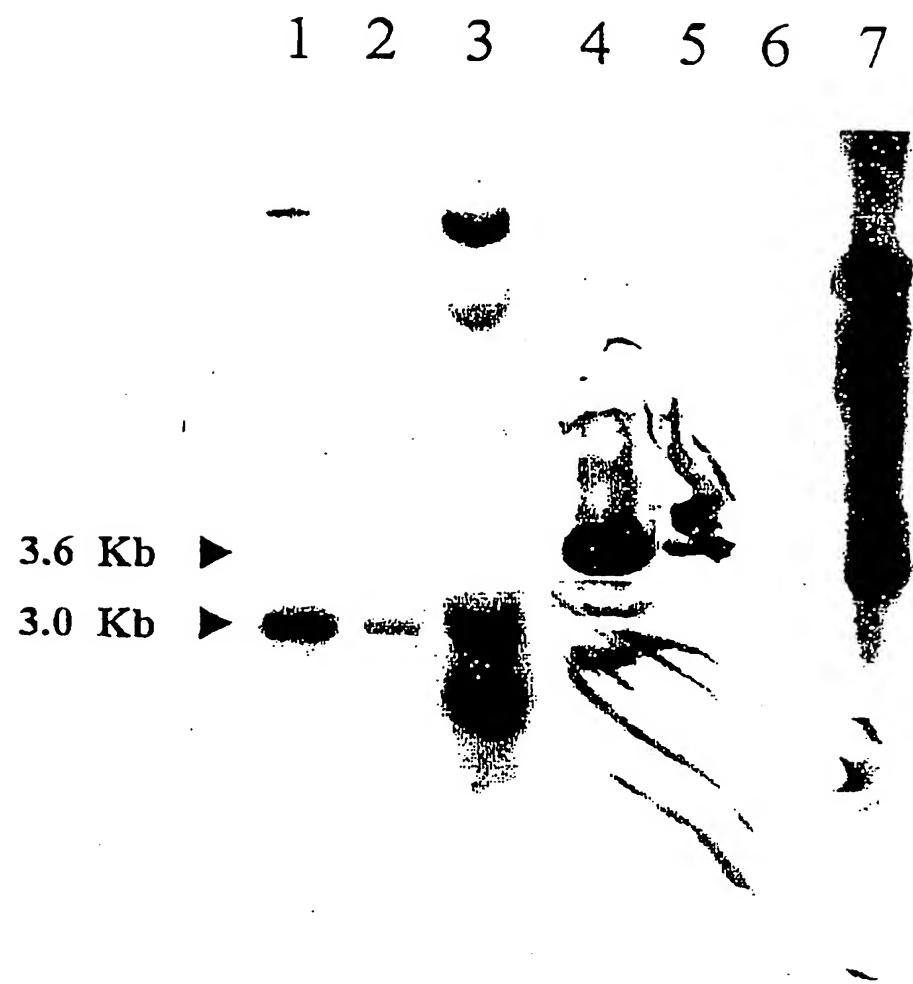
Figure 14

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1141 ggcactcac ttgggaggaa caagctggaa caactgtga agcaagggcg catgtccaaag
1201 gaggagatcg attcgacata caagatcatg aggcgtatcg aggggtgagga gtcggccctg
1261 gatgcgtcag agctttaat cacgagcaca aggccaggaga ttgtgagca gtggggatgt
1321 tacgatggat ttgtgtcaa gcttgagaaa gtgcgtggg cacggccgag ggcgggggtt
1381 agctgccatg gtgcgttacat gccttaggatg gtgggtattc ctccggaaat ggatttcagc
1441 aatgttgtat ttcatgaaga cattgtggg gatgggtacg tcaaagatga tatcggttgt
1501 ttggagggtg cctcacccaa gtcaatgccc ccaatttggg ccgaagtgtat ggcgttcctg
1561 accaaccctc acaagccatg gatccctggcg ttatcaagac cagacccgaa gaagaacatc
1621 actaccctcg tcaaagctt tggagagtgt cgtccactca gggactlgtc aaacccttac
1681 ctgatcatgg gtaacagaga tgacatcgac gacatgtcg ctggcaatgc cagtgccctc
1741 accacagtgc tgaagctgtat tgacaagtat gatctgtacg gaagcgtggc gttccctaaag
1801 calcacaaatc aggctgacgt cccggagatc tatcgccctcg cggccaaaal gaaggccgtc
1861 ttcatcaacc ctgcgtctgt tgagccgtt ggtctcaccc tgatcgaggc tgccggcacac
1921 ggactcccgta tagtcgttac caagaatgtt ggtccgggtc acattacaaa tgcattaaac
1981 aacggactgc tcgttgaccc acacgaccag aacgccatcg ctgatgcact gctgaagctt
2041 gtggcagaca agaaccgttg gcagggatgc cggagaaacg ggcgcgcgaatccacc
2101 tacatcggtc cggagcactg ccgcacttac ctcaccaggg tggccgggtt cccggtaagg
2161 aacccgggtt ggctgaagga cacaccagca gatggccggag cggatggaga ggatgtccgt
2221 gaggatccatca tggacgcgtca ggacatgtca ctccgtcg ccaatcgacgg tgagaagagc
2281 tgcgtgaaca ttaacgalcc actgtgggtc gaccccccagg atcaagtgca gaagatcgatc
2341 aacaacatca agcagtcgtc agcgttccctt cccgtccatgtt ctgcgtcg cggccggggcc

Figure 14 (Contd.)

2401 acaggcagca ccatgaacaa atacccactc ctgcgcggc gccggcgctt gttcgctata
2461 gctgtggact gtcaccagga cgtggccgt gtcagcaaga agatgcgtca ggtgtatccag
2521 gaagtttca gaggcagtcgg atcggactcc cagatgttca agatctcagg gttcacgcgt
2581 tcgactgcga tgccgttgic cggacacatc cagcttcgtc agtcggcaa gatcccagcg
2641 accgacttcg acgcctcat ctgtggcagc ggcagcggagg tggactatcc tggcacggcg
2701 aactgcatgg acgtgtcaagg aaagctgcgc ccagatcagg actatctgtat gcacatcagc
2761 caccgctggc cccatgacgg cgcgaggcag accatagcga agctcatggg cgctcaggac
2821 ggttcaggcg acgtgtcga gcaggacgtg gcgtccagta atgcacactg tgcgcgttc
2881 ctcataaaag acccccaaaa ggtgaaaacg gtcgtatgaga tgagggagcg gctgaggatg
2941 cgtggctcc gtcgcacat catgtactgc aggaactcga caaggctca ggttgcctt
3001 ctgctagcat caaggtcaca ggcactcagg tatcttccg tgcgtgggg cgtatctgt
3061 gggaaacatgt atctgatcac cggggaaacat ggcgacacccg atctagagga gatgtatcc
3121 gggctacaca agaccgtgtat ctgtggc gtcaccgaga aggggtcggg agcactgggt
3181 aggagcccag gaagctacaa gagggacgt gtcgtccgt ctgagacccc ctggctgcg
3241 tacacgactg gtgagctgaa ggcgcacggg atcatgcggg ctctgaagca agtctccaag
3301 acttccagcg gcatgtgaat tttatgttgcgtt tttatgttgcgtt ttcactgcta
3361 tataaaataa gttgtgaaca gtaccgcggg tttatgttgcgtt ttcactgcta
3421 aacaggacac tgctaactat acgtgtgaat atacgactgt caagattgtatgcgt
3481 tccatttctc aatgtatcaa tcggaattc

Figure 15



INTERNATIONAL SEARCH REPORT

International application No.

PCT/US99/10576

A. CLASSIFICATION OF SUBJECT MATTER

IPC(6) : C12N 5/04, 15/63, 15/64, 15/82, 15/84; A01H 1/00, 1/04, 5/00

US CL :Please See Extra Sheet.

According to International Patent Classification (IPC) or to both national classification and IPC

B. FIELDS SEARCHED

Minimum documentation searched (classification system followed by classification symbols)

U.S. : Please See Extra Sheet.

Documentation searched other than minimum documentation to the extent that such documents are included in the fields searched

Electronic data base consulted during the international search (name of data base and, where practicable, search terms used)

APS, Agricola, Caplus

C. DOCUMENTS CONSIDERED TO BE RELEVANT

Category*	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
Y	PENA et al. Agrobacterium-mediated Transformation Of Sweet Orange And Regeneration Of Transgenic Plants. Plant Cell Rep. 1995, Vol. 14, pages 616-619, especially pages 616-617, see entire document.	19-23, 26
Y	McCABE et al. Direct DNA Transfer Using Electric Discharge Particle Acceleration (ACCELL Technology). Plant Cell Tiss. Org. Cult. 1993, Vol. 33, pages 227-236, especially pages 227-228, 231-233.	1-18, 24, 25, 27-32
Y	GAMBORG, O.L. Plant Cell Cultures: Nutrition And Media. in Cell Culture and Somatic Cell Genetics of Plants. 1984, Vol. 1, pages 18-26, especially pages 18-19.	1-32

 Further documents are listed in the continuation of Box C. See patent family annex.

* Special categories of cited documents:	*T*	later document published after the international filing date or priority date and not in conflict with the application but cited to understand the principle or theory underlying the invention
A document defining the general state of the art which is not considered to be of particular relevance	*X*	document of particular relevance; the claimed invention cannot be considered novel or cannot be considered to involve an inventive step when the document is taken alone
E earlier document published on or after the international filing date	*Y*	document of particular relevance; the claimed invention cannot be considered to involve an inventive step when the document is combined with one or more other such documents, such combination being obvious to a person skilled in the art
L document which may throw doubts on priority claim(s) or which is cited to establish the publication date of another citation or other special reason (as specified)	*&*	document member of the same patent family
O document referring to an oral disclosure, use, exhibition or other means		
P document published prior to the international filing date but later than the priority date claimed		

Date of the actual completion of the international search

01 JULY 1999

Date of mailing of the international search report

10 SEP 1999

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INTERNATIONAL SEARCH REPORT

International application No.

PCT/US99/10576

C (Continuation). DOCUMENTS CONSIDERED TO BE RELEVANT

Category*	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
Y	MAPES, M.O. Tissue Culture Of Bromeliads. The International Plant Propagators' Society Combined Proceedings. 1973, Vol. 23, pages 47-55, especially pages 48-50, see entire document.	2-4, 7-14, 17-27, 30-35
Y	CHIA et al. The Firefly Luciferase Gene As A Non-invasive Reporter For Dendrobium Transformation. Plant J. 1994, Vol. 6, No. 3, pages 441-446 especially page 446, see entire document.	18, 25
Y	RANGAN, T.S. Pineapple. In Handbook of Plant Cell Culture. P. K. Ammirato et al, eds. 1984, pages 373-382, especially pages 374-375, 379.	1-32
Y	ZHU et al. Isolation Of Genomic DNAs from Plants, Fungi And Bacteria Using Benzyl Chloride. Nucl. Acids Res. 1993, Vol. 21, No. 22, pages 5279-5280, see whole document.	16, 29
Y	SABELLI et al. Nucleic Acid Blotting And Hybridisation. Meth. Plant Biochem. 1993, Vol. 10, pages 79-100, see whole document.	16, 29
Y	WITTY, M. Thaumatin II: A Sweet Marker Gene for Use In Plants. Meth. Enzymol. 1992, Vol. 216, pages 441-447, especially pages 442-443.	31
Y	HAMILTON et al. Antisense Gene That Inhibits Synthesis Of The Hormone Ethylene In Transgenic Plants. Nature. 19 July 1990, Vol. 346, pages 284-287, see whole document.	32

INTERNATIONAL SEARCH REPORT

International application No.
PCT/US99/10576

Box I Observations where certain claims were found unsearchable (Continuation of item 1 of first sheet)

This international report has not been established in respect of certain claims under Article 17(2)(a) for the following reasons:

1. **Claims Nos.:**
because they relate to subject matter not required to be searched by this Authority, namely:

2. **Claims Nos.:**
because they relate to parts of the international application that do not comply with the prescribed requirements to such an extent that no meaningful international search can be carried out, specifically:

3. **Claims Nos.:**
because they are dependent claims and are not drafted in accordance with the second and third sentences of Rule 6.4(a).

Box II Observations where unity of invention is lacking (Continuation of item 2 of first sheet)

This International Searching Authority found multiple inventions in this international application, as follows:

Please See Extra Sheet.

1. As all required additional search fees were timely paid by the applicant, this international search report covers all searchable claims.
2. As all searchable claims could be searched without effort justifying an additional fee, this Authority did not invite payment of any additional fee.
3. As only some of the required additional search fees were timely paid by the applicant, this international search report covers only those claims for which fees were paid, specifically claims Nos.:

4. No required additional search fees were timely paid by the applicant. Consequently, this international search report is restricted to the invention first mentioned in the claims; it is covered by claims Nos.:

Remark on Protest

The additional search fees were accompanied by the applicant's protest.
No protest accompanied the payment of additional search fees.

INTERNATIONAL SEARCH REPORT

International application No.
PCT/US99/10576

A. CLASSIFICATION OF SUBJECT MATTER:**US CL :**

435/69.1, 410, 418, 419, 420, 430, 431, 430.1, 468, 469, 470; 800/278, 279, 283, 285, 286, 288, 293, 294, 295, 298, 301, 302

B. FIELDS SEARCHED

Minimum documentation searched

Classification System: U.S.

435/69.1, 410, 418, 419, 420, 430, 431, 430.1, 468, 469, 470; 800/278, 279, 283, 285, 286, 288, 293, 294, 295, 298, 301, 302

BOX II. OBSERVATIONS WHERE UNITY OF INVENTION WAS LACKING

This ISA found multiple inventions as follows:

This application contains the following inventions or groups of inventions which are not so linked as to form a single inventive concept under PCT Rule 13.1. In order for all inventions to be searched, the appropriate additional search fees must be paid.

Group I, claim(s)1-18, 24, 25, 27-32, drawn to a first product, a stably transformed transgenic pineapple-like totipotent body; first method of transforming a pineapple-like totipotent body via particle bombardment.

Group II, claim(s) 19-23, 26, drawn to a second method of transforming a pineapple-like totipotent body, via Agrobacterium.

Group III, claim(s) 33-35, drawn to a third method, for producing a pineapple-like totipotent body.

The inventions listed as Groups I-III do not relate to a single inventive concept under PCT Rule 13.1 because, under PCT Rule 13.2, they lack the same or corresponding special technical features for the following reasons: The special technical feature of plant transformation via particle bombardment is not shared nor required by the other groups. The special technical feature of plant transformation via Agrobacterium is not shared nor required by the other groups. The invention of group three does not share nor require the transformation methods of the other groups.